Antioxidative properties of herbal extracts

The main subject of this graduation thesis is the assessment of anti-oxidation activity of *Stellaria media*.

Anti-oxidation protection of the organism is a complex process of mechanisms, which must be in balance with the production of free radicals. The excess of the free radicals are referred to as oxidation stress. The organism is able to resist the free radicals inducing oxidation stress with the preventative and remedial mechanisms, physical barriers or with the influence of antioxidants of enzymatic and non-enzymatic origin.

Great attention is particularly paid to the incidence of free radicals in the live organism. These are mainly reactive nitrogen radicals (RNS) and reactive oxygen radicals (ROS), also including superoxide, but this is not only a harmful radical, it also plays an important role during the protection of the organism against infection. It forms a part of the effective weapon of phagocytes against bacteria and extraneous structures.

The subject of my graduation thesis was *Stellaria media*, an annual plant, which is referred to as troublesome weed, nevertheless it contains a number of important substances such as: ascorbic acid, carbohydrates, peptides, glycosides, lipids and higher fatty acids, carotenoids and flavonoids. Recently they are under intensive research. From ancient times the plant has been used in folk medicine for various types of diseases and in homoeopathy. I have evaluated the plant from a pharmacognostic standpoint. I have carried out a microscopic examination, TLC chromatography and HPLC analysis; I have determined the drying loss, quantity of the total ash, quantity of ash insoluble in HCl, assessment of extractive substances, flavonoids and content of ascorbic acid in the plant. For the assessment I used a dispensatory. The results comparable with the literature were ascertained for ascorbic acid.

The antiradical activity of extract was assessed on the basis of the possibility to extinguish DPPH radical and superoxide. Methanol, water-methanol and aqueous extractions were used for the assessment of anti-radical activities. The water - methanol extract showed the most significant anti - oxidation activity against DPPH. This extract was shaken out with petroleum naphtha and depleted of almost all chlorophyll. Other samples showed a much smaller anti - radical activity. Shaking the extracts out using petroleum naphtha mainly helped to remove the chlorophyll as its presence was interrupting for the assessment.

Aquatic extracts showed the activity towards the superoxide radical depending on concentration.

Stellaria media is generally considered to be a troublesome weed; nevertheless the plant contains interesting content substances, which play a significant part in a wide row of the life - important processes in the human body.